IN THE CLAIMS

1. (Canceled).

2. (Canceled).

3. (Currently Amended)   A <u>processing</u> apparatus ~~according to claim 1,~~ <u>of secret information constructed by an arithmetic</u> <u>operation processing circuit, a storing circuit, and a signal</u> <u>line connecting said processing and storing circuits,</u>

<u>in which said processing apparatus of the secret</u> <u>information obtains a same processing result as would be</u> <u>obtained by processing the secret information and data as a</u> <u>processing target by a conventional processing method,</u>

<u>wherein said storing circuit holds:</u>

<u>secret information forming information</u> <u>different from said secret information, and</u>

<u>secret information forming information</u> <u>processing means for outputting said processing result by</u> <u>using said secret information forming information and said</u> <u>data serving as a processing target without allowing said</u> <u>secret information to appear in said arithmetic operation</u> <u>processing circuit, said storing circuit, and said signal</u> <u>line, and</u>

<u>said arithmetic operation processing circuit</u>

<u>executes said secret information forming information</u>

<u>processing means,</u>

wherein said storing circuit further has converting

means for converting said secret information forming

information into another secret information forming

information, and

said another secret information forming information

is information for allowing said secret information forming

information processing means to output ~~the~~ <u>said</u> same

processing result ~~as said processing result~~.

4. (Currently Amended) An apparatus according to claim ~~1~~
<u>3</u>, wherein said secret information is a private key for

decrypting or forming a digital signature in a public key

encryption technique.

5. (Currently Amended) An apparatus according to ~~1~~ <u>3</u>,

wherein said arithmetic operation processing circuit executes

said converting means at a predetermined timing.

6.   (Canceled).

7.   (Canceled).

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8. (Currently Amended) A <u>processing</u> program ~~according to~~ ~~claim 6,~~ of secret information in a processing apparatus constructed by an arithmetic operation processing circuit, a storing circuit, and a signal line connecting said processing and storing circuits,

<u>in which said processing program of the secret information obtains a same processing result as would be obtained by processing the secret information and data as a processing target by a conventional processing method,</u>

<u>wherein said arithmetic operation processing circuit is allowed to output said processing result by using secret information forming information different from said secret information and said data serving as a processing target without allowing said secret information to appear in said arithmetic operation processing circuit, said storing circuit, and said signal line, and</u>

~~further comprising~~ converting means for converting said secret information forming information into another secret information forming information,

~~and~~ wherein said processing program of secret information outputs <u>said</u>~~the~~ same processing result ~~as said~~ ~~processing result~~ by using said another secret information forming information.

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9. (Currently Amended)   A processing system of secret information for transmitting and receiving ~~a~~the processing result by using ~~said secret information by using~~ a processing apparatus of secret information ~~according to claim 1,~~ constructed by an arithmetic operation processing circuit, a storing circuit, and a signal line connecting said processing and storing circuits,

in which said processing result obtained by said processing apparatus of the secret information is the same as would be obtained by processing the secret information and data as a processing target by a conventional processing method,

wherein said storing circuit holds:

secret information forming information different from said secret information, and

secret information forming information processing means for outputting said processing result by using said secret information forming information and said data serving as a processing target without allowing said secret information to appear in said arithmetic operation processing circuit, said storing circuit, and said signal line, and

said arithmetic operation processing circuit executes said secret information forming information processing means,

wherein said storing circuit further has converting means for converting said secret information forming information into another secret information forming information, and

said another secret information forming information is information for allowing said secret information forming information processing means to output said same processing result,

wherein an apparatus on a receiver side of said processing result has means for setting said secret information forming information processing means and said secret information forming information into said storing circuit of said processing apparatus,

and an apparatus on a user side of the processing apparatus comprises means for inputting the data serving as a processing target to said processing apparatus, means for receiving said processing result from said processing apparatus, and means for transmitting said received processing result to said receiver side apparatus.

10. (New) An apparatus according to claim 3, wherein said storing circuit holds said secret information forming information as a plurality of secret information partial information.

11. (New) A program according to claim 8, wherein said processing program of secret information processes a plurality of secret information partial information as said secret information forming information.

12. (New) An apparatus for processing secret information, comprising:

a storing circuit holding secret information forming information having relationship with regard to said secret information and being able to form said secret information, and

an arithmetic operation processing circuit which comprises:

conversion means for converting said secret information forming information to other secret information forming information having relationship with regard to said secret information and used to form said secret information;

processing means for executing a step of calculating a latest intermediate data for one or a plurality of times and

a step of calculating a processing result by using the latest intermediate data,

wherein said step of calculating the latest intermediate data comprises:

a step of calculating the latest intermediate data different from said secret information by using a processing target, said other secret information forming information and initial data; and

a step for replacing the initial data by the calculated latest intermediate data.

13. (New) An apparatus according to claim 12, wherein said storing circuit in use holds said secret information forming information as a plurality of secret information partial information.

14. (New) An apparatus according to claim 13, wherein said processing means operates to output a same processing result of said processing result.

15. (New) An apparatus according to claim 12, wherein said processing means operates to output same processing result of said processing result.

16. (New) A program according to claim 8, wherein said secret information is a private key for decrypting or forming a digital signature in a public key encryption technique.

17. (New) A program according to claim 8, wherein said arithmetic operation processing circuit executes said converting means at a predetermined timing.

18. (New) An apparatus according to claim 12, wherein said secret information is a private key for decrypting or forming a digital signature in a public key encryption technique.

19. (New) An apparatus according to claim 12, wherein said arithmetic operation processing circuit executes said converting means at a predetermined timing.